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**SYSTEM AND METHOD FOR 3-D DIGITAL RECONSTRUCTION OF AN  
ORAL CAVITY FROM A SEQUENCE OF 2-D IMAGES**

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**ABSTRACT OF THE DISCLOSURE**

Systems and methods are provided through which a model-based vision system for dentistry which assists in diagnosis, treatment planning and surgical simulation. The present invention includes an integrated computer vision system that constructs a three-dimensional (3-D) model of the patient's dental occlusion using an intra-oral video  
15 camera. A modified shape from shading technique, using perspective projection and camera calibration, extracts the 3-D information from a sequence of two-dimensional images of the jaw. Data fusion of range data and 3-D registration techniques develop a complete 3-D digital jaw model. Triangulation of the 3-D digital model is then performed, and optionally, a solid 3-D model is reconstructed.

"Express Mail" mailing label number: EL721275557US

Date of Deposit: April 26, 2001

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